

*REMARKS/ARGUMENTS**The Pending Claims*

Claims 1-73 are pending. Claims 1-17 and 69-73 are directed to a tricalcium phosphate composition. Claims 18-68 are directed to an article comprising a consolidated TCP structure. Reconsideration of the pending claims is respectfully requested.

*The Restriction Requirement*

The Office Action dated October 4, 2006 set forth a restriction requirement of claims 1-68. In response to the restriction requirement, Applicants elected, with traverse, the claims of Group 1-17 and the secondary additive species protein for further prosecution. The current Office Action acknowledges Applicants' election with traverse but fails to address the arguments presented in the Reply to Restriction Requirement filed on November 6, 2006, or to make the Restriction Requirement final. A telephone call was placed to Examiner Ali Soroush on March 7, 2007 in an attempt to clarify the status of the Restriction Requirement but Examiner Soroush did not return Applicants' telephone message.

Applicant requests formal response to the arguments presented in the reply filed November 6, 2006, either indicating that the restriction requirement has been withdrawn in whole or in part, or indicating that the arguments are not persuasive and that the restriction requirement is made final. Until such formal response is received, claims 18-68 will remain pending.

*The Amendments to the Claims*

Claim 1 has been amended to further recite that the composition can be consolidated to form a TCP article having a compressive strength of about 50 MPa or greater. This amendment is supported by the instant specification at, for example, page 14, paragraph [0051].

New claims 69-73 have been added. New claim 69 recites that the TCP composition of claim 1 can be densified to form a TCP article having a compressive strength of 150 MPa

or greater. New claim 70 recites that the TCP composition of claim 1 can be densified to form a TCP article that is able to transmit about 50% or more light having a wavelength in the range of about 150 nm to about 1,000 nm. These amendments are supported by the instant specification at, for example, page 14, paragraph [0048]. New claim 71 recites a composition comprising particulate tricalcium phosphate (TCP) having an average particle size of about 5  $\mu\text{m}$  or less, an average crystal size of about 250 nm or less and a surface area of about 20  $\text{m}^2/\text{g}$  or greater, wherein the TCP composition can be densified to form a TCP article having a density that is 60% of the theoretical density or greater. New claim 72 depends from claim 71 and recites that the TCP composition can be densified to form a TCP article having a density that is 90% of the theoretical density or greater. These amendments are supported by the instant specification at, for example, page 13, paragraph [0047]. New claim 73 depends from claim 71 and recites that the TCP composition can be sintered to form the densified TCP article at a temperature of about 400° C to about 1400° C. This amendment is supported by the instant specification at, for example, page 15, paragraph [0053].

No new matter has been added by way of these amendments.

#### *The Summary of the Office Action*

Claims 1-17 stand rejected under 35 U.S.C. § 102(e) as anticipated by Tofighi et al. (i.e., U.S. Patent 6,840,961). Claims 1-17 stand additionally rejected under 35 U.S.C. § 103(a) as obvious over Dalal et al. (i.e., U.S. Patent 6,949,251) in view of Ying et al. (i.e., U.S. Patent 6,013,591).

#### *The Anticipation Rejection*

The anticipation rejection is moot in view of the amendments to the claims.

Claims 1-17 as amended are directed to a tricalcium phosphate composition that can be consolidated to form a tricalcium phosphate (TCP) article having a compressive strength of about 50 MPa or greater. Nothing in Tofighi et al. teaches or suggests a TCP composition that is capable of being consolidated to form a TCP article having such compressive strength. To the contrary, Tofighi et al. teaches a composition comprising a mixture of two different calcium phosphate materials, referred to as a “calcium phosphate precursor” (see col. 4, lines

47-54), that are capable of forming a poorly-crystalline hydroxyapatite implant in vivo. (See col. 7, lines 3-10). Indeed, Tofighi et al. specifically teaches against the formation of TCP articles, stating that such articles are undesirable because they degrade rapidly in vivo but lack sufficient strength for weight-bearing applications. (See, e.g., col. 1, line 66, to col. 2, line 1). Applicants have discovered that TCP articles having surprising compressive strength can be formed from TCP compositions through careful control of the particle size, crystal size, and surface area of the precursor TCP composition.

Since Tofighi et al. fails to teach each and every element of the invention recited in the pending claims, the anticipation rejection is improper and should be withdrawn.

#### *The Obviousness Rejection*

The obviousness rejection is respectfully traversed.

Dalal et al. is directed to a  $\beta$ -TCP composition and the use thereof to prepare porous  $\beta$ -TCP granules which can be combined with a binder to form a moldable putty composition. As acknowledged by the Office Action, nothing in Dalal et al. teaches or suggests a TCP composition having the crystal size, particle size, or surface area recited by the pending claims. In addition, nothing in Dalal et al. teaches or suggests the use of that composition to form a consolidated TCP article having a compressive strength of about 50 MPa or greater, as recited by the pending claims. While Dalal et al. teaches sintering of the TCP composition, Dalal et al. only teaches the step of sintering to produce porous TCP granules and not densified articles.

Contrary to the assertion of the Office Action, it would not be obvious to one of ordinary skill in the art to modify the teaching of Dalal et al. by applying the teaching of Ying et al. Ying et al. is directed to hydroxyapatite compositions that can be consolidated and densified to produce articles having high compressive strength. One of ordinary skill in the art given Dalal et al. would not be motivated to combine the teachings of Dalal et al. with Ying et al. because Dalal et al. is not concerned with the formation of TCP articles having a high compressive strength.

Moreover, nothing in Dalal et al. or Ying et al. suggests that a TCP composition having the particle size, crystal size, and surface area recited in the pending claims could be used to produce a consolidated TCP article having high compressive strength. As evidenced by Tofighi et al. discussed above, one of ordinary skill in the art would not expect such combination to work insofar as TCP articles were generally known to have insufficient compressive strength compared to hydroxyapatite articles. Applicants have discovered that consolidated TCP articles having surprisingly high compressive strength be formed from TCP compositions through careful control of the particle size, crystal size, and surface area of the precursor TCP composition.

Furthermore, even if one of ordinary skill in the art were motivated to combine the teachings of Dalal et al. and Ying et al., which they would not be, such combination would not provide a TCP composition having the particle size, crystal size, and surface area recited in the pending claims. TCP and hydroxyapatite have different physical and chemical properties, which require different synthetic and calcination conditions to produce. Accordingly one of ordinary skill in the art, following the disclosure of Ying et al. could not arrive at the composition recited in the pending claims without having to carry out a significant amount of experimentation to determine the synthesis temperature, Ca/P ratio, and calcination conditions, etc. necessary to produce the composition recited in the pending claims.

For all of these reasons, Dalal et al. and/or Ying et al. fail to teach or suggest each and every element of the invention recited in the pending claims. Accordingly, the obviousness rejection is improper and should be withdrawn.

### *Conclusion*

Applicants respectfully submit that the patent application is in condition for allowance. If, in the opinion of the Examiner, a telephone conference would expedite the prosecution of the subject application, the Examiner is invited to call the undersigned attorney.

Respectfully submitted,



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